MISSISSIPPI RIVER CORRIDOR PLAN

The Saint Paul Comprehensive Plan

Draft for Community Review

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CITY OF SAINT PAUL
DEPARTMENT OF PLANNING AND
ECONOMIC DEVELOPMENT

Contents

1.0 Summary

The Saint Paul Mississippi River Corridor Plan describes the Mississippi River in Saint Paul as a series of interrelated systems: natural, economic, social, and built. Just as the River Corridor has been shaped by history, decisions about development and change will influence each of these systems for future generations. Thus, this plan focuses on protecting the resources that support our community, and on the management of human activity and the physical environment.

Saint Paul is rediscovering and redefining its relationship with the Mississippi River. Increased environmental stewardship and establishing connections to the river are central to this rediscovery. The Mississippi River Corridor Plan reinforces the body of river-related planning already completed in recent years. Those plans which are most influential come from within and outside the City: the 1999 Land Use Plan, the *Saint Paul on the Mississippi Development Framework*, the Mississippi National River and Recreation Area (MNRRA) Comprehensive Management Plan, and the State Critical Area program.

The Mississippi River Corridor Plan is a chapter of the Saint Paul Comprehensive Plan. The surface water management chapter will be written after the River Corridor Plan is completed. The current Mississippi River Corridor Plan was adopted in 1981, and amended in 1987. After public hearings and consideration of public comments, the Saint Paul Planning Commission will forward the plan to the City Council. The City Council will review the plan and submit it to the Metropolitan Council, the Department of Natural Resources, and the National Park Service for joint review. After receiving comments from these agencies, the City Council will adopt the final plan.

The River Corridor Plan will guide use and development along the Mississippi River, while protecting the river's ecological function.

There are numerous entities with jurisdiction over the Mississippi River, ranging from local to federal units of government. The City intends that its plans and ordinances for the river corridor be consistent with those of these governmental partners.

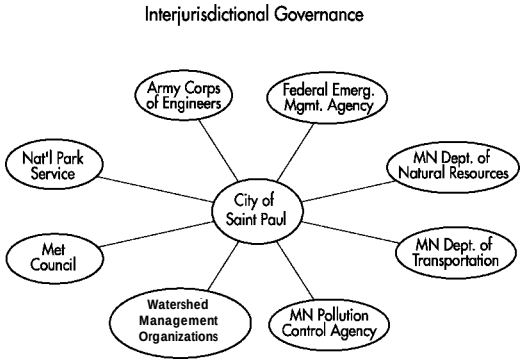


Figure A

Strategy 1: Protect the River as a Unique Urban Ecosystem

- Undeveloped bluffs should be protected and stabilized, through acquisition, use of native species, building setbacks, and by prohibiting development on the bluff face.

- The River Corridor contains sensitive natural resources. The floodplain and shorelines, wetlands, and natural habitat found throughout the River Corridor should be protected and sustained.

- The City supports the green corridors project of the Minnesota DNR. The goal is to establish regional greenways around high quality native habitat remnants, thus providing continuous habitat corridors for native plant and wildlife species. In Saint Paul, the river valley and the Trout Brook reach are parts of the DNR plan.

- Working with its watershed partners, the City will continue to identify means for improved stormwater management. Public education will continue to be an important way to help protect water quality.

Strategy 2: Sustain the Economic Resources of the Working River

- The City supports continuation of the working river and commercial navigation in Saint Paul. The economic importance of commercial navigation to St. Paul, Minnesota, and the Upper Midwest is significant. The environmental benefits of barging over other hauling modes (air quality, traffic congestion, etc.) have been well documented.

- The City supports the Port Authority's policy of replacing non-river-related businesses with river-related businesses at Southport and Red Rock Industrial Districts, as leases expire.

- Along the riverfront and its floodplain, new development should be river-related. Along with industrial and commercial uses, housing may also be considered river-related.

Strategy 3: Enhance the City's Quality of Life by Reconnecting to the River

- Parks, open space, and trails are an important way of allowing people to come the river. The City is working on a number of initiatives, including the realignment of Shepard Road, to increase park and open space along

the river. Over time the City's riverfront open space system will become more continuous and river-related. The City will also complete a continuous Mississippi River Trail along the entire length of both sides of the river.

- The views afforded by magnificent bluffs in Saint Paul's river corridor are part of what makes the city a special place. There are opportunities in the Shepard Road/West Seventh Street corridor, Battle Creek and Highwood neighborhoods to create additional view points to the river. To enhance river corridor views, all billboards should be removed from the river corridor and not replaced.

- New neighborhoods are part of creating connections to the river. In strategic River Corridor locations, following adopted design principles, new urban villages should be established.

- Cultural resources in the river corridor include early settlements, historic structures, and architecturally unique bridges. These resources should be preserved and restored, as they are integral to the character and history that defines Saint Paul.

Strategy 4: Use Urban Design to Enhance the River Corridor's Built Environment

- New development should establish "traditional" street and block patterns to enable people to experience the river through visual and physical connections. These traditional street patterns will restore connections between neighborhoods further upland and the river.

- Primary view corridors should remain open and unobstructed. Accordingly, the scale of new buildings in the river corridor should relate to topography, and should preserve critical public views.

2.0 Introduction

The Saint Paul Mississippi River Corridor Plan is a chapter of the city's Comprehensive Plan. Other plan chapters address Land Use, Parks and Recreation, Housing, Water Management, Transportation, Sewers, and Libraries. The River Corridor Plan will guide use and development along the Mississippi River, while protecting the river's ecological function. There are multiple facets to the river's role in the city and region — as an ecological system, as a cultural and historical resource, as a public amenity, as a focus for recreational activity, for commercial and industrial activity, and increasingly for new residential development. The River Corridor Plan will help Saint Paul realize the full potential of the river as the city's symbolic "front yard." The River Corridor Plan recognizes that the ecological function of the river is not only affected by activity throughout the river corridor as defined in this plan, but also by activity in the watersheds that feed the river.

There are multiple facets to the river's role in the city and region—as an ecological system, as a cultural and historical resource, as a public amenity, as a focus for recreational activity, for commercial and industrial activity, and increasingly for new residential development.

2.1 Purposes

The purposes of the Saint Paul Mississippi River Corridor Plan encompass its designation as a state critical area and as a national river and recreation area — the Mississippi National River and Recreation Area — as well as its role as a multi-purpose resource for the city, state and region. These are:

- To protect and preserve the Mississippi River Corridor as a unique and valuable resource for the benefit of the health, safety, and welfare of the citizens of the city, state, and region.
- To restore and establish the unique urban ecology of Saint Paul's Mississippi River Corridor.
- To reinforce the Mississippi River Corridor as Saint Paul's front yard, and the backbone of a community-building network extending beyond the shoreline and into the fabric of surrounding neighborhoods.
- To manage the Mississippi River Corridor as an important economic resource for river- related industries and commercial navigation for the city, state and region.
- To expand opportunities for using the Mississippi River Corridor as a city amenity and enhance citizens' quality of life, including increased public access, recreation and education.

- To protect and preserve the Mississippi River Corridor as an essential element in the federal, state, regional and local recreation, transportation, sewer and water systems.

- To prevent and mitigate danger to the life and property of the citizens of the city, state and region.

- To preserve, enhance and interpret the Saint Paul Mississippi River Corridor's historic, archeological and ethnographic (cultural) resources.

2.2 Legislative History and River Corridor Plan Background

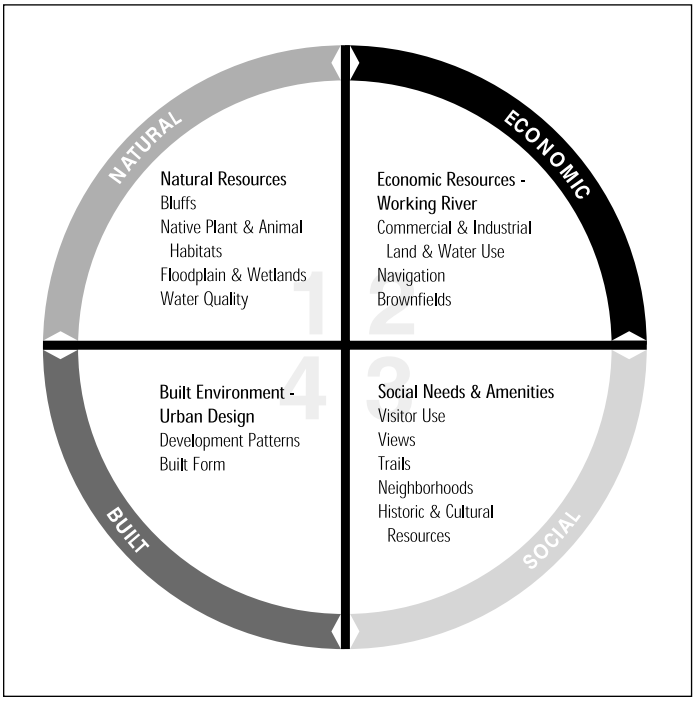
In the past twenty five years there has been an increased legislative focus on environmental stewardship of the Mississippi River. The first major effort, authorized by state law in 1976, was the designation of the Mississippi River Corridor within the Twin Cities Metropolitan Area as a State Critical Area. The Critical Area program required coordinated planning among communities in the river corridor to resolve land and water use conflicts, and to preserve and enhance the natural, aesthetic, cultural and historical value of the river for public use. Cities were required to establish protection of the river resource through planning and related ordinances.

Figure B
Mississippi River Critical Area in Saint Paul

In response, the Saint Paul City Council adopted a *Saint Paul Mississippi River Corridor Plan* in 1981, with policies for managing this important resource and balancing open space use with industrial and commercial development. This plan fulfilled the state's requirement for a Critical Area Plan. It also became a chapter of the Saint Paul Comprehensive Plan, and was last amended in 1987 to incorporate the 1986 Riverfront Pre-Development Plan. Recent state law has required all Twin Cities municipalities to update their comprehensive plans, and Saint Paul has nearly completed this effort. As part of the required update to comprehensive plans, the City will also review and revise its river corridor-related zoning regulations.

To further guarantee effective management of the river resource, the U.S. Congress designated the Mississippi National River and Recreation Area (MNRRA) as a unit of the national park system. The boundaries of the MNRRA corridor are identical to those of the Critical Area, the 72-mile corridor of the Mississippi River stretching from the Crow River in Anoka County to beyond the City of Hastings, and including Saint Paul and Minneapolis. The MNRRA designation led to the creation of a Comprehensive Management Plan (CMP) with policies related to land and water use, resources management, and visitor use and interpretation. This updated River Corridor Plan responds to the vision for the Mississippi River outlined in the MNRRA Comprehensive Management Plan, as well as the continuing requirements of the Critical Area program.

2.3 River Corridor Plan Strategies



In response to the MNRRA Comprehensive Management Plan, and as part of the city's own process of updating its comprehensive plan, this Saint Paul Mississippi River Corridor Plan outlines four strategies for future management of the river corridor. The four strategies focus on the various systems related to the river: natural systems, economic systems, social or human systems, and built environment. The River Corridor Plan seeks to balance these strategies, all of which are interrelated and affecting each other.

3.0 The Setting

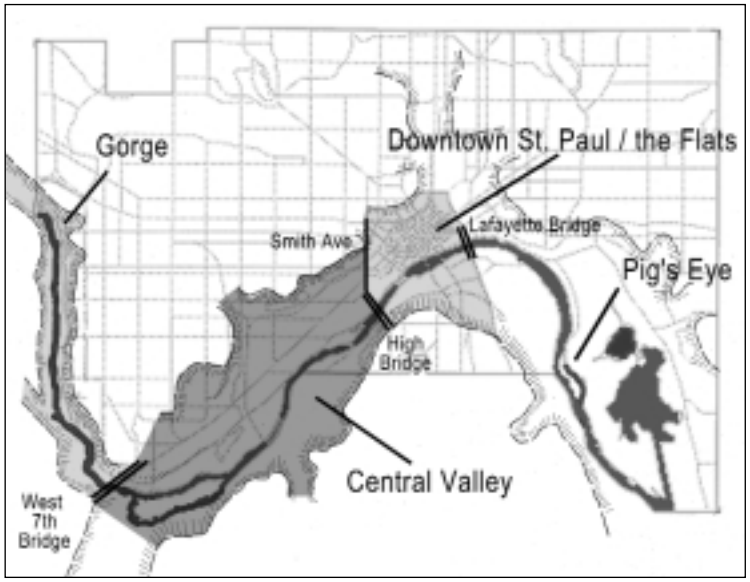
3.1 Planning Assumptions

The main assumptions that underlie the recommendations in this River Corridor Plan are:

1. For nearly a century, the Mississippi River's role as primarily a transportation and industrial corridor led the city to think of and treat the river as its "back yard". The City is now gradually rediscovering and celebrating the river as its front yard - - a majestic and unparalleled natural amenity which unites neighborhoods and downtown. Part of this rediscovery includes the opportunity over the next 10 to 20 years to create new neighborhoods near the river.

2. The river and its reaches are more than a thin ribbon moving through the City. The river corridor should be viewed as a watershed model, an entity that incorporates elements, communities, and patterns from well beyond the river itself.

Figure D
Mississippi River Valley



3. The character of the river valley changes over its 29 miles. The river valley contains a variety of landforms, from the low lands along the river's edge to the high bluffs. The character of river valley land uses also changes considerably, from the quiet, residential character of the gorge, to the mixed commercial, industrial and residential uses along the West Seventh Street corridor, to the vibrancy of Downtown and the Flats, to industrial districts downstream of downtown, and preserved blufftop neighborhoods in the Highwood neighborhood.

4. Parkland and open space are the predominant uses of riverfront land in Saint Paul. Most of this land will remain unchanged. There are however, many opportunities to explore additional access, preservation, and restoration projects throughout the parks/open space system. When development in these areas does occur (the enhancements at Harriet Island, for example), it should be in the context of preserving the river corridor.

3.2 Planning for the Mississippi River: City and Other Plans

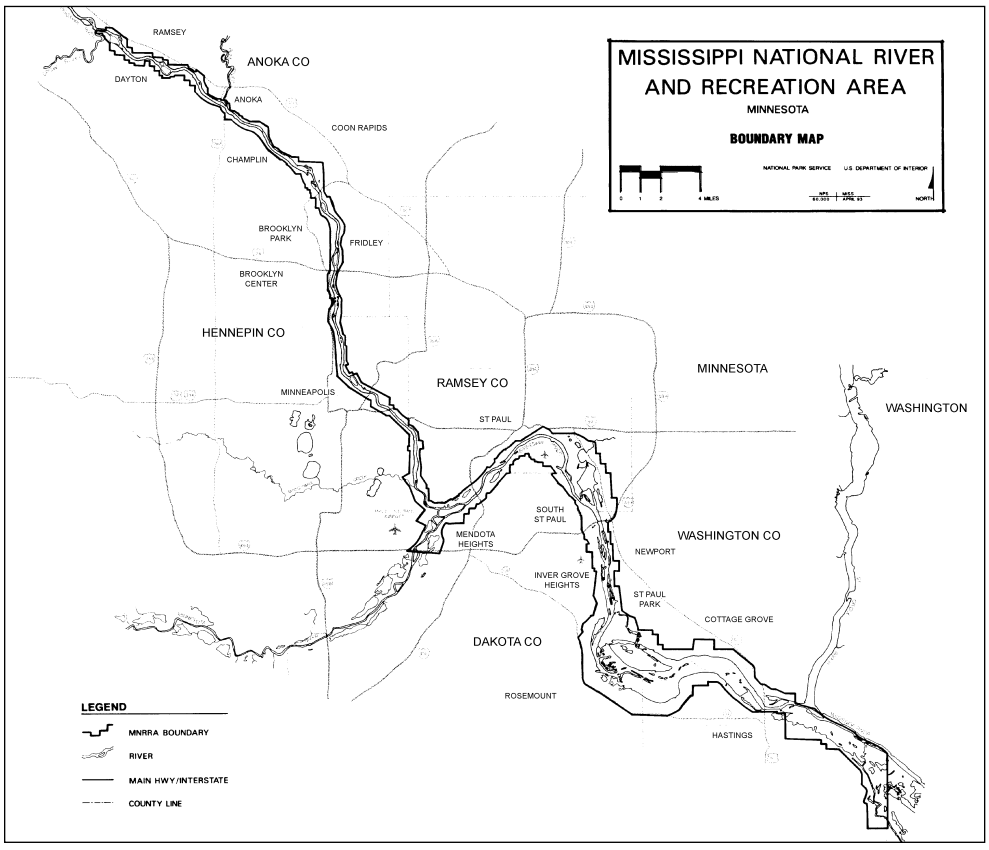
In the past five years there has been a tremendous amount of river-related planning, both by the City of Saint Paul and by other organizations. These visions and plans have focused on Saint Paul's Mississippi River corridor in an evolutionary and remarkably consistent manner, and include the following:

Saint Paul Comprehensive Plan (Parks & Recreation,Transportation, and Land Use chapters)
Completed in 1996, 1997, and 1998, respectively.

Mississippi National River and Recreation Area (MNRRA) Comprehensive Management Plan National Park Service, Mississippi River Coordinating Commission and the U.S. Dept. of the Interior.

The MNRRA Comprehensive Management Plan was approved by the U.S. Dept. of the Interior in 1995 and is intended to provide guidance for managing the river corridor for the next 10-15 years. The plan's goals are to 1) preserve the unique and significant resources of the Mississippi River Corridor in the Twin Cities metro area, 2) encourage the coordination of federal, state and local efforts, and 3) provide a comprehensive management plan to assist the State of Minnesota and local governments in managing development in the corridor. The MNRRA vision advocates the protection of both the working river and the natural river ecosystem. The MNRRA plan suggests a voluntary set of additional policies that cities may adopt to enhance preservation of the Mississippi River corridor as a national park, referred to as "Tier II" policies. ("Tier I" policies are required by existing State Critical Area policies and regulations, and should already exist in cities' river plans and ordinances.) Local governments should work with the Metropolitan Council, the Department of Natural Resources and the National Park Service to incorporate MNRRA policies into their river corridor plans and ordinances.

Figure E
Mississippi National River and Recreation Area Boundary



Saint Paul's Central River Valley Development Framework - Project of the Design Center for the American Urban Landscape (Bill Morrish), College of Architecture and Landscape Architecture, University of Minnesota.

This project, completed in June 1995, served as one of the foundations for the *Saint Paul on the Mississippi Development Framework* that was completed in 1997. In conjunction with its *Case Study Integrating Urban Design and Ecology* project and newsletters (August 1994 - May 1995, six newsletters), the Design Center compiled an urban design inventory of Saint Paul's physical resources in the form of maps that visually display the city's physical resources connected to the Mississippi River. These Saint Paul-Mississippi River contextual maps highlight Saint Paul's unique river valley landscape and ecology, including its valleys, reaches, bluffs, landings, neighborhoods, vegetation, wildlife and the potential connections among all of these unique resources. The goals of this project were to identify the following for Saint Paul's Central River Valley: 1) image, identity and orientation, 2) community gathering places, 3) connections and continuity, and 4) river-related projects and locations.

Metro Greenprint: Planning for Nature in the Face of Urban Growth - Greenways and Natural Areas Collaborative.

In 1997, this collaborative project involving a group of citizens from around the seven-county Twin Cities Metropolitan Area included representatives from metro counties, watershed districts, Dept. of Natural Resources, Greening the Great River Park, University of Minnesota, Metropolitan Council, Friends of the Mississippi River and Trust for Public Land. The *Metro Greenprint* outlines a vision and specific strategies for creating a region-wide network of natural areas, open spaces, parks and greenways while accommodating urban growth in the Twin Cities metro area. The vision focuses on identification of natural areas and open spaces and potential connections between them, along with recommended conservation techniques and funding strategies. The Mississippi, Minnesota and Saint Croix river valleys represent a significant portion of this green network.

Saint Paul on the Mississippi Development Framework - City of Saint Paul, Saint Paul Riverfront Corporation, and the Capital City Partnership.

The city's most comprehensive vision for the Mississippi River was outlined in the *Saint Paul on the Mississippi Development Framework* in June of 1997, following more than two years of intense work by the community, city staff, and other organizations. The *Framework* calls for reconnecting the city's downtown and neighborhoods to the river by restoring the river valley's and city's natural environment, creating new urban villages near the river

and creating a physically appealing and vital downtown environment. The *Framework* is based on "an implicit understanding that quality of life - the ability of a city to effectively balance economy, environment and society - provides a primary competitive advantage in an increasingly globalized world." The *Framework* outlines the following ten principles that represent an integrated approach to city building:

- Evoke a sense of place.
- Restore and establish the unique urban ecology.
- Invest in the public realm.
- Broaden the mix of uses.
- Improve connectivity.
- Ensure that buildings support broader city-building goals.
- Build on existing strengths.
- Preserve and enhance heritage resources.
- Provide a balanced network for movement.
- Foster public safety.

Although the *Framework* is not part of the city's Comprehensive Plan, the plan's vision, ten principles and recommendations were endorsed by the City Council as the guide for the city's development policies downtown and along the central riverfront and should be incorporated, as appropriate, into the city's Comprehensive Plan updates and amendments. The ten principles are incorporated into the Land Use Plan (1999).

Riverfront Action Strategies - Saint Paul Port Authority.

Completed in 1999, this document highlights the importance of the Mississippi River and Saint Paul Port to the Upper Midwest economy. As a working river, the Mississippi is part of an intermodal freight transportation system that enables agricultural producers throughout the Upper Midwest to compete in the global market. This strategy document signals the Port Authority's commitment to maintain shipping-related uses in its riverfront facilities. It also expresses the Port Authority's commitment to beautify industrial sites, to clean up roadsides and riverbanks, and to manage stormwater on-site.

Design Study for River Corridor Redevelopment Sites - St. Paul PED, Saint Paul Design Center.

To complete this River Corridor Plan, Saint Paul PED, along with the Saint Paul Design Center and the Riverfront Corporation sponsored a design study to examine selected redevelopment sites. The study was conducted in early 2000, with consultants from the Cuningham Group and Close Landscape Architects. The study's goals were to consider the scale of new

development, and to create design guidelines that met the spirit and intent of MNRRA and Critical Area requirements. An intergovernmental working group, chaired by the Planning Commission, and including the Department of Natural Resources, Metropolitan Council and National Park Service assisted in this process. The results of this study provide the basis for policies in Chapter 7 of the plan; recommendations for the five redevelopment sites can also be found in Chapter 7 and Appendix A.

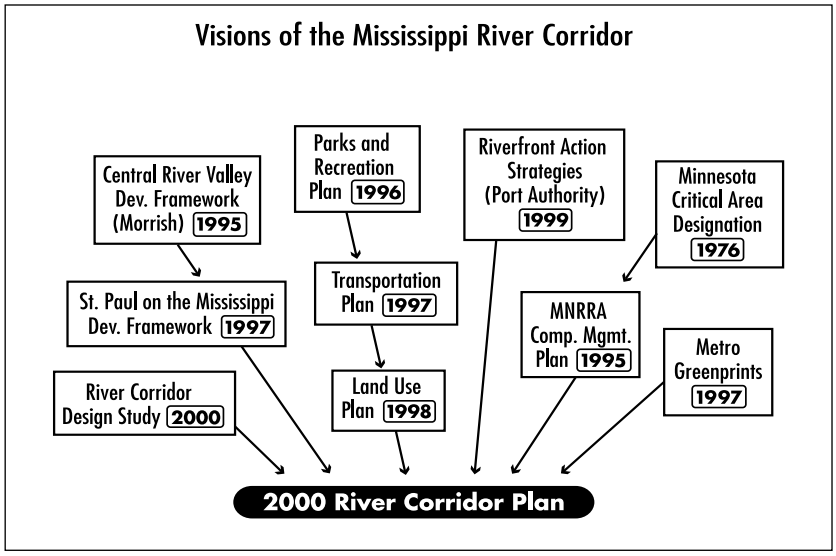


Figure F
River Corridor Planning

Together, these planning efforts have established a new framework for thinking about the Mississippi River, and Saint Paul's place on it that emphasizes thinking of the river and the city as an integrated living ecosystem within a larger regional setting. The intent is to restore the river's natural ecology, to establish and improve green connections between neighborhoods and downtown and the river, and to support urban intensification consistent with a river setting, while maintaining the working river. Collectively, these visions provide a map for stewardship and use of the river in the next century. This Mississippi River Corridor Plan brings these visions together in one document for the entire river corridor in Saint Paul.

The intent is to restore the river's natural ecology, to establish and improve green connections between neighborhoods and downtown and the river, and to support urban intensification consistent with a river setting, while maintaining the working river.

3.3 National Trends

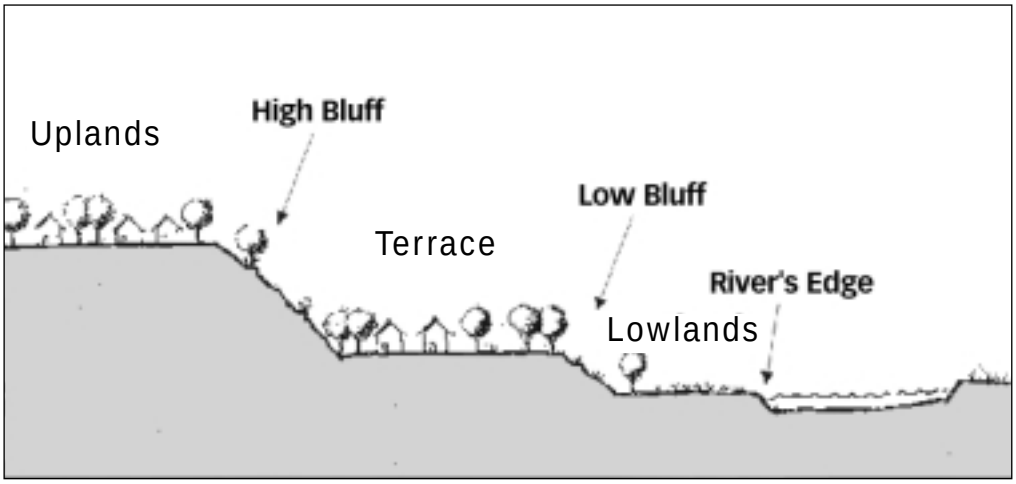
Nationwide, certain trends have emerged pertaining to urban riverfronts. There has been a resurgence of interest in the recreational use of riverfront land, and communities nationwide are creating new trails, green space, promenades, and other recreational amenities. As industries that traditionally were located on the riverfront have changed, industrial land is turning over and being redeveloped to create housing and entertainment-oriented commercial activity. Finally, there is increased awareness and interest in the ecological function of rivers and the watersheds that feed them.

Disastrous floods in past years have served as reminders that watershed management plays an integral role in protecting rivers and the communities along them.

3.4 Typology of River Landforms

The Mississippi River valley is comprised of a range of landforms, each with unique characteristics and requiring specific responses. While most of this plan's policies apply to the entire river valley, many of the Urban Design policies of this plan are tailored to the specific landforms, described below:

Figure G
River Valley Landforms



- The **River's Edge** is characterized by natural shoreline vegetation in parkland or natural areas. The River's Edge downstream of the High Bridge is stabilized with a variety of man-made treatments for the purpose of channel maintenance, including rock rip rap and walls.

- The **Lowlands** are the lands adjacent to the River and are either flood prone or formerly flood prone lands. Lowlands provide critical habitat for migratory birds, yet developed areas in the Lowlands are nearly devoid of tree canopy. The Lowlands are generally characterized by mixed manufacturing or office uses, dedicated public parks and open space, or cleared and vacant lands. Largely redeveloped for industry, buildings in the Lowlands tend to be larger floorplate structures with associated large parking areas.

- The **Low Bluff** is landward of the Lowlands. It is generally characterized by a varied edge of dense woods and open views, sometimes eroded or overgrown. There exist occasional and dramatic bluff face/rock outcrops expressing the natural geology of this valley, although the elevation change of the Low Bluff is less striking than the High Bluffs (described below). Access from the Lowlands through the Low Bluff is somewhat

limited. The Low Bluff is less legible as either habitat or public open space than the High Bluff.

- The **Terrace** is the generally flat area located between the Low Bluff and the High Bluff. The elevation of the Terrace ranges in between 740 and 780 feet above sea level. At locations throughout the valley, the Terrace makes transitions into River Reaches and Ravines. The Terrace is generally fully developed, and characterized by mixed use commercial and industrial lands transitioning from rail oriented manufacturing to service/convenience uses. The Terrace also contains multi-story housing with smaller fragmented pockets of single family homes.

- The **High Bluff** is located landward of the Terrace, and is the most recognizable feature of Saint Paul's visually stunning river valley. The High Bluff is characterized by a nearly vertical limestone bluff face in many areas. In other areas, the High Bluff is covered with a continuous, often dense canopy of overstory trees with occasional openings for views and limited public access. The High Bluff is an environmentally sensitive area that is highly susceptible to erosion and associated loss of vegetation and animal habitat. Selected roads traverse the High Bluff, creating primary connections between the Terrace and Uplands (described below).

- The **Uplands** are the areas located above the highest bluffs. The Uplands are flat or gently sloping, and are generally characterized by mixed residential neighborhoods coming to the edge, with occasional multi-story multifamily structures and institutional landmark buildings. The urban forest of the Uplands generally consists of boulevard trees.

A map showing the general location of these landforms throughout Saint Paul can be found in Chapter 7.

4.0 *Strategy 1:* Protect the River as a Unique Urban Ecosystem

As the twenty-first century begins, the city has endorsed an ecosystem approach to planning which balances environmental, community, and economic imperatives.

The Mississippi River, as it weaves through Saint Paul, is part of a complex ecosystem, and is a unique and valuable natural resource. The river has been designated as a Minnesota State Critical Area, a National River and Recreation Area, and an American Heritage River. The history of Saint Paul has always been closely tied to the Mississippi River, but over time, development has heavily impacted many of the river's indigenous landscapes. As the twenty-first century begins, the city has endorsed an ecosystem approach to planning which balances environmental, community, and economic imperatives. This approach moves the city in the direction of thinking of the river, river valley, and developed areas as an integrated living ecosystem. The city will provide for the continuation of a variety of urban uses, including industrial, commercial, and residential within the river corridor, while strengthening its commitment to preserving the natural resources of the river corridor. The intent of this chapter is neither to discourage future development, nor to promote wholesale restoration of the natural environment. Rather, natural resource management policies will be strengthened to enhance the urban ecosystem in the Mississippi River corridor, and improve the quality of place in Saint Paul.

Saint Paul currently uses river corridor overlay zoning to protect natural resources throughout the state-designated Critical Area of the Mississippi River. Overlay zoning restricts what type of development may occur in the

Figure H
Natural Shoreline

floodplain, and applies strict standards for development. These standards include development setbacks from the river, and prohibiting development on steep slopes.

This chapter addresses protection of bluffs, native plant and animal habitats, wetlands and floodplain, and water quality. (Appendix F contains maps that show the location of steep slopes, significant vegetative stands, wetlands, the floodplain, storm water discharge points, and natural drainage routes.)

Objective 4.1 Protect the blufflands of the river corridor

Saint Paul's natural topography relates much of the city to the river. Bluff formations framing the Mississippi River reinforce the city's unique natural setting and contribute to Saint Paul's character and sense of place. The topography of the river valley varies considerably. In the so-called "river gorge" between Saint Paul and Minneapolis and also in the Highwood neighborhoods, there is a single continuous bluff. Along the West Seventh corridor and the West Side, however, there are distinct high and low bluffs separated by a terrace. Likewise, the location of bluff areas relative to the river varies from the gorge where the river lies directly below the bluffs, to portions of the Highwood and West Side neighborhoods where the bluffs are set back more than a mile from the river. While the bluffs, ravines, and tributary areas are an attractive and unique urban amenity, they are a fragile part of the river ecosystem.

Historically, both Ramsey County and the City have been active in protecting bluff lots with steep slopes facing the river. Ramsey County has acquired lots between Upper and Lower Afton Road for permanent county

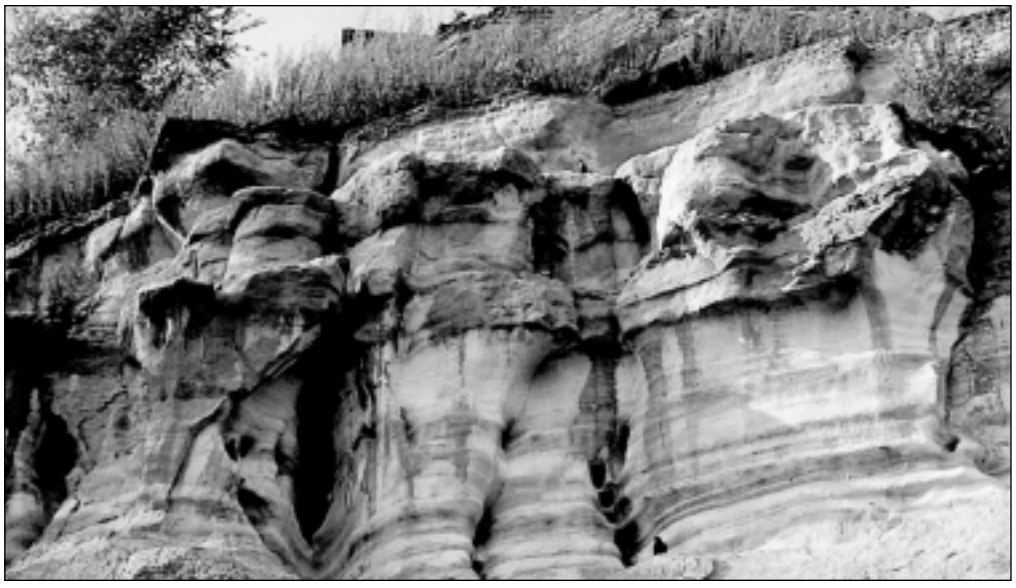


Figure I
Bluff face

park ownership. Over the past several years, the City has used Federal ISTEA funding to acquire lots between Lower Afton Road and Highwood Avenue to be permanently dedicated as city parkland. Saint Paul also currently maintains a required bluff setback for development, and prohibits development on steep slopes along the bluff line to prevent erosion, and to maintain the natural, vegetated appearance of the bluff line visible from the river.

Policies:

4.1.1 The City will continue its program to acquire lots on the bluff face as funding opportunities arise, extending the program to include lots south of Highwood Avenue. Private efforts to acquire lots for open space dedication are encouraged, as are actions by Ramsey County to convert lots acquired through tax forfeiture to permanent public park ownership.

4.1.2 The City will support efforts to stabilize all bluffs in public ownership through re- introduction of native species and visitor use management. Efforts such as those by Friends of the Parks and Trails to create a bluff management plan for the gorge area of the river corridor are encouraged. The West Side bluffs are in need of management and stabilization.

4.1.3 Outside the downtown area, the City will prohibit any additional structural development on the bluff face, by defining the toe, top and face of the bluff in the zoning code. Exceptions are allowed for low impact public structures related to recreation, access, and connections.

4.1.4 The City is committed to maintaining the natural appearance of the bluffs for most of the river corridor especially when the bluffs are visible from the river, or opposite shore. In order to protect bluff stability and minimize erosion, the city will continue to prohibit residential development on slopes that exceed eighteen percent, and will continue to prohibit industrial and commercial development on slopes that exceed twelve percent. The City will clarify conditions for construction on slopes steeper than twelve percent.

4.1.5 The City will continue to preserve the bluff impact area (forty feet landward of the bluff line) in a natural state. The City will clarify conditions for construction if it is to be permitted within the bluff impact area.

Objective 4.2 Preserve and restore native plant and animal habitats

Saint Paul is located at the meeting of the prairie and eastern hardwood forests. Despite the changes accompanying urbanization, a variety of habi-

tat types continue to exist today within the river corridor, including remnant savannas, prairies, river edge wetlands, riverine areas, the bluffs, as well as the river itself and its floodplain. The Department of Natural Resources inventories rare species and natural communities, and according to the its Natural Heritage Database, there are 55 known occurrences of such species or communities in Saint Paul's Mississippi River Corridor. These include Bald Eagles sighted in the Pig's Eye Heron Rookery and Battle Creek Regional Park, Blanding's Turtles sighted at Lilydale Regional Park and Hidden Falls - Crosby Park, several types of mussels, and a variety of other plant and animal species. (For a full listing, see Appendix C.) Particularly near downtown Saint Paul, remnant landscapes and the animal habitats they contain have historically become disconnected from the larger river ecosystem, and their long term viability is continually challenged by the effects of urbanization.

Figure J
Peregrine Falcon
photo courtesy of Raptor Center, University of Minnesota, June, 2000.

Fortunately, there are many opportunities for preserving and restoring native plant and animal habitats throughout the river corridor. Great River Greening has played an instrumental role in restoring vegetation throughout the river valley, with the goal of creating a connected greenway for migrating songbirds and improving the ecology of the Mississippi River valley in Saint Paul. Over the past several years the organization and its volunteers have planted more than 30,000 native trees and shrubs and 25,000 native wildflowers in the river corridor near downtown. Addressing the downtown area, the Saint Paul on the Mississippi Development Framework has signaled the need to improve the balance between the natural and built environments through protection of native vegetation and improved river edge treatments. The redevelopment plans for Harriet Island Regional Park and the East Bank Mississippi River Trail Corridor are examples of this shift in approach, as they call for redesigning river edges to incorporate both hard edge and indigenous vegetative treatments. Of course, projects to restore natural shorelines must be compatible with the requirements of channel design and flood management.

There are many opportunities for preserving and restoring native plant and animal habitats throughout the river corridor.

Policies:

4.2.1 To the greatest extent possible, existing mature trees and native vegetation will be preserved in site development projects. In the Highwood neighborhood, the City will continue to enforce the Tree Preservation District standards to maintain a maximum vegetative canopy.

4.2.2 The City will encourage use of native vegetation or other compatible floodplain vegetation in redevelopment projects. Where appropriate, when redeveloping or stabilizing the river's edge, soil bio-engineering techniques and native plantings will be used in combination with more traditional engineered solutions. In the more formal landscape treatments occurring along the downtown riverfront, the shoreline will be strengthened with native vegetation, including native trees and shrubs.

Throughout the river corridor, the City will encourage integration of future growth and development with restoration programs that reconnect and restore remnant natural communities.

Figure K
Trail between Warner Road and the Mississippi River

4.2.3 The City will continue to support the efforts of organizations such as Great River Greening to restore native grasses, shrubs and trees along the riverfront downtown and elsewhere in the river corridor.

4.2.4 The City will continue to enforce the 50 foot shoreline setback for structures. In addition, the City will support efforts to restore the shoreline to a more natural character within 100 feet of the river, and to improve the aesthetic appearance of the floodwall. Such efforts must be compatible with current channel design and flood control management, and exceptions are made for park buildings, marinas, and other commercial or industrial river-dependent uses. Redevelopment should include removal of unused docking facilities (i.e., at the Koch-Mobil site).

4.2.5 In all new developments, threatened and endangered wildlife habitats shall be protected from alterations which would endanger their survival.

4.2.6 The City will integrate its plans with the work of the DNR's Metro Greenways and Natural Areas Collaborative. This metro area collaborative has identified high quality native habitat remnants which could be linked into regional greenways, providing continuous habitat corridors to support native plant and wildlife species. Many potential greenway opportunities exist in the East Metro area, including Saint Paul.

Figure L
Ben Thompson's vision of "The Great River Park"

Objective 4.3 Encourage protection and preservation of floodplain and wetland areas in the city

The last comprehensive Federal Emergency Management Agency (FEMA) study of the Saint Paul floodplain occurred in 1989. Since that time, two major flood events occurred in 1993 and 1997, and other changes have occurred in the floodplain. In addition, the Army Corps of Engineers has completed a multi-year flood protection project on the West Side which will result in removal of the West Side Flats from the floodplain, because the new higher levee will control a 500-year flood. As a result of these changes, the City has completed a new comprehensive study of the floodplain, with assistance from the Department of Natural Resources, to model the latest trends in the Mississippi River's hydrology. FEMA will next conduct its own study (concluding in 2001). FEMA's process will result in revised floodplain boundaries in the river corridor, and accompanying changes to FEMA flood insurance rate maps and the City's river corridor overlay zoning districts.

Wetlands also play an important role during floods, and for controlling stormwater. Their flexible storage capacity allows flood waters to be released slowly, reducing flood damage. In the era when most of Saint Paul's neighborhoods developed, modern ecosystem knowledge was lacking, and wetlands and creekbeds were routinely drained and filled. Through zoning and site plan review, Saint Paul began protecting wetlands in 1994, after passage of the state Wetlands Conservation Act. The Legislative Commission on Minnesota Resources (funded through state lottery revenues), has provided financial resources to communities, including Saint Paul, for wetland restoration projects. The restoration of Ames Lake — formerly the Phalen Shopping Center site — is one such example. Other opportunities for restoration exist, including efforts by the Lower Phalen Creek Restoration Project to connect Swede Hollow Park to the river by restoring lower Phalen Creek in the ravine between Dayton's Bluff and Lowertown. As our understanding of watersheds continues to evolve, the need for careful management and planning in wetland and floodplain areas of the city is assumed.

Policies:

4.3.1 The State of Minnesota, through the Department of Natural Resources, allows new development to occur in the Mississipi River floodplain up to a one-half foot increase over the 100-year flood elevation. To the greatest extent possible, the City will enforce the state floodplain encroachment limit so that small increments in development do not gradually degrade the floodplain.

4.3.2 Recognizing the need to treat wetlands as a valued resource, and assuming its responsibility to administer the Wetlands Conservation Act, the City will protect existing wetlands and encourage restoration of degraded wetlands.

Objective 4.4 Protect water quality through comprehensive and coordinated watershed management

The water quality of the Mississippi River is directly connected to the activities in the surrounding watershed. Pollution comes from both direct, or point sources, such as a sewage treatment plant discharge, and from nonpoint sources, such as stormwater runoff. The largest source of nonpoint source pollution into the Mississippi is the Minnesota River, which contains significant amounts of agricultural runoff from outside of the Mississippi River Corridor. The Minnesota Pollution Control Agency is attempting to address this problem, which is complex and will take extensive time and funds to correct. While all sources of pollution will be addressed, the City's program will focus on city stormwater runoff pollution prevention due to the relatively greater impact this source has on the river.

The water quality of the Mississippi River is directly connected to the activities in the surrounding watershed

SEWER SEPARATION PROGRAM

Historically, Saint Paul's original sewers drained directly to the Mississippi River or to several natural streams that in turn drained into the river. The oldest sewer on record in Saint Paul was built in 1856. At the time it was standard engineering practice throughout the country to convey both storm water and sanitary waste to receiving waters in one pipe. However, by the early 1920's it was becoming apparent that the Mississippi River was polluted and something had to be done. In 1938, the first sewage treatment facility on the entire Mississippi River went into operation. Minneapolis and Saint Paul each financed and built their own interceptor sewers and shared the cost of building the treatment plant. Dry weather flows were then treated prior to emptying into the river, but during rainstorms, when the flows exceeded the sewer's capacity, combined sewer overflows (rainwater and sewage) continued to pollute the river.

In 1985, after years of study and discussion, sewer separation was determined to be the most economical method to abate combined sewer overflows to the Mississippi River and to meet federal and state water quality standards. At this time the Minnesota Pollution Control Agency directed Saint Paul, Minneapolis and South Saint Paul to develop a new plan for combined sewer overflow elimination and for the Metropolitan Waste Control Commission to incorporate each city's plan into an overall metro plan.

In response, Saint Paul developed the *Comprehensive Sewer Plan for the City of Saint Paul.* Although Saint Paul began separating its combined sewers in 1960, by 1985, only half of the City was served by separate sanitary and storm sewer systems. The ten year program initiated in 1986 was a massive undertaking with over $172 million in designated projects (1984 dollars).

The sewer separation program has led to significant improvement in the quality of the Mississippi River. The following are viewed as indicators of the improved water quality:

- Pollution-sensitive Hexagenia mayfly have returned to Twin Cities' stretch of river after a 30 year absence.
- Metropolitan Council Environmental Services' monitoring data shows a significant drop in fecal bacteria levels in the river as a result of sewer separation.
- Bald eagles have returned to the Twin Cities' stretch of river.
- Fish population and diversity have recovered from 3 species to over 25 species.
- Minnesota Department of Natural Resources has established catch and release fishing regulations to protect trophy sized walleyes that are being caught from the metropolitan stretch of Mississippi River.

The completion of Saint Paul's sewer separation program has achieved the overall purpose of cleaning up the river, demonstrating the city's commitment to improved stewardship of the river environment, and exceeded its performance goals. The City now has two completely separate sewer systems, one carrying surface water runoff and the other one carrying sanitary sewage. But the work of protecting and restoring the Mississippi River goes on. The partners involved in this project will continue to address the issues that affect the Mississippi and our environment.

WATERSHED AWARENESS EDUCATION

Saint Paul falls within the boundaries of four watershed management organizations, each of which develops a comprehensive watershed plan. Saint Paul's new Water Management Plan will be completed by the Public Works Department two years after the completion of the watershed management plans. The four watershed management organizations are 1) Capitol Region Watershed District, 2) Ramsey-Washington Metro Watershed District, 3) Lower Mississippi River Watershed Management Organization, and 4) Middle Mississippi River Watershed Management Organization.

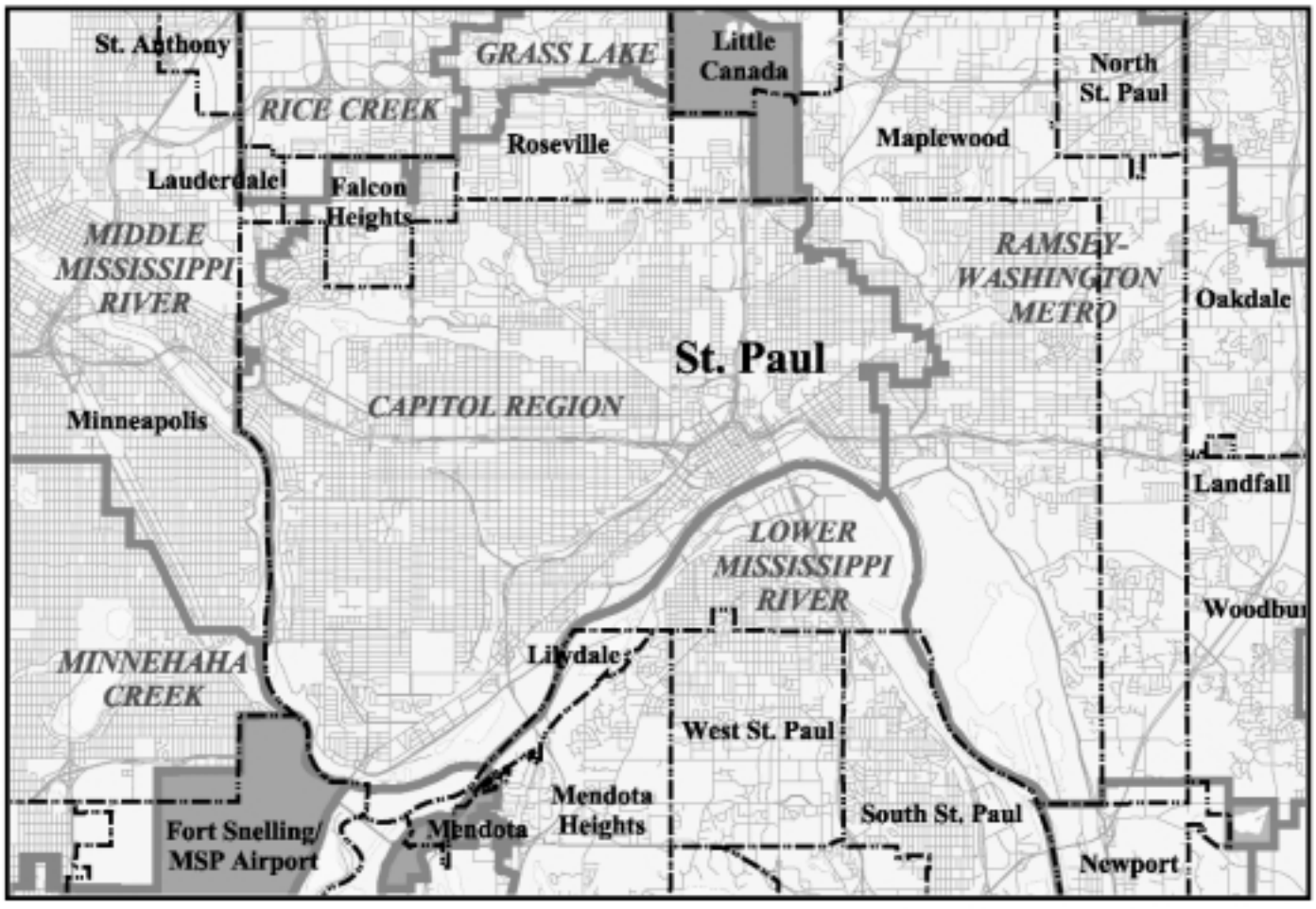
Photo courtesy of Friends of the Mississippi River

Figure M
Volunteers promote public awareness

Saint Paul has been actively educating its residents about water quality issues for years. Early efforts began to explain the need for the Sewer Separation Program and the associated benefits to the Mississippi River. Currently, the City and the Friends of the Mississippi River are working in partnership on the Storm Drain Stenciling Program. Since 1993, the city has worked with thousands of volunteers to stencil a message, "Don't Pollute Drains to River", next to storm drains and to distribute door hangers to the surrounding neighborhood. In addition, city staff are working with schools in Saint Paul on watershed education projects.

Saint Paul is also a Watershed Partner, which is an award winning partnership of metro area agencies, non-profit groups and local units of government. Watershed Partners developed an educational watershed exhibit, which is used at venues across the Twin Cities every year, including the Minnesota State Fair. The Partners are currently involved in a metro wide media campaign which involves news print and radio messages as well as printed grocery store bags and magnets. Efforts to promote better public awareness can have a profound impact on reducing nonpoint source pollution.

Figure N
Watershed Management Organizations



The shaded areas on the map represent areas of potential boundary discrepencies which are currently under investigation.

The Minnesota Fish Consumption Advisory provides guidelines for safely eating fish caught in the Mississippi River where it flows through Saint Paul, per the Minnesota Department of Health's *Minnesota Fish Consumption Advisory* (available on the DNR web site). Fish in Minnesota's lakes and rivers are monitored annually for the amount of methyl mercury and PCBs present.

WATER MANAGEMENT AND REGULATION

Water management and regulation is complex, multi-leveled and overlapping. See Appendix D for the entities that are responsible for water management in Saint Paul.

Policies:

Most of the policies cited in this chapter will be more fully addressed in the development of Saint Paul's water management plan, which will be completed by April, 2002 .

4.4.1 Continue participation in existing watershed management programs and in developing the City's stormwater permit program and local water management plan. Coordinate municipal activities that affect water quality as part of the stormwater discharge permit and the local water management plan.

4.4.2 Continue city-wide education programs that address watershed awareness and stewardship.

4.4.3 The City encourages proper use of chemicals for fertilizer and pest control in residential areas and on public land, and support sustainable land treatment activities and integrated pest management practices.

4.4.4 For large developments (5 acres or more), the City will continue to require settling and infiltration ponds to control the quality and rate of stormwater runoff.

4.4.5 Encourage alternatives to turf in the shoreline area to reduce fertilizer and pesticide runoff into the river.

4.4.6 Encourage enforcement of federal, state and local floodplain and wetland protection policies.

4.4.7 The City supports using stormwater management elements such as ponds and swales to unite development areas with the natural environment. Emphasize what these elements add to site development in terms of aesthetic benefits and cost- effective stormwater management. Incorporate public use as a site amenity whenever possible in designing stormwater management systems.

4.4.8 The City will support programs to better manage and decrease the volume of toxic waste in the river corridor.

4.4.9 Protect streambanks and water quality from the negative impacts of recreation.

4.4.10 The City will support regional pollution prevention and control plans for the metropolitan area.

4.4.11 The City supports programs to develop and implement spill prevention and response plans for the river.